

**To:** Renner - DNR, Steven[steven.renner@state.co.us]  
**Cc:** Bruce Stover - DNR[Bruce.Stover@state.co.us]; Brent Lewis[b1lewis@blm.gov]; czillich[czillich@blm.gov]; Way, Steven[way.steven@epa.gov]  
**From:** Brown - DNR, Kirstin  
**Sent:** Fri 3/7/2014 5:39:56 PM  
**Subject:** Re: Passive Treatment for American Tunnel - matching funds

This would be a bench scale test for a sulfate reducing bioreactor to treat American Tunnel water at Gladstone, 8 miles north of Silverton, Colorado in the Upper Cement Creek watershed.

Upper Cement Creek was a hardrock gold and silver mining area from the 1870's through 1991. Water Quality in Upper Cement Creek began declining in 2003 when active water treatment ceased and the local groundwater table rose due to installation of bulkheads during decommissioning of the Sunnyside Mine. The rising groundwater table re-entered older mine workings, dramatically increasing acid mine drainage from the historic and abandoned Red and Bonita, Mogul, and Gold King mines. Mine drainage also leaks around the final outby bulkhead in the American Tunnel.

The American Tunnel, along with the Gold King, Red and Bonita and Mogul mines are contributing large amounts of metals to the Animas River watershed which has been a major concern for the Animas River Stakeholders Group, BLM, CDPHE, and EPA. Current water quality standards are not being met in the Animas River below town due in large part to the four draining mines in Upper Cement Creek. Steps are currently being taken to assess the potential of a bulkhead in the Red and Bonita. The potential for a sulfate reducing bioreactor at the American Tunnel should also be explored.

The American Tunnel drains 80 gallons per minute of pH 5 water with high metals. The American Tunnel portal is owned by the BLM. The BLM may have access to funding leftovers from the Red Devil project in Alaska. The BLM has been asked to put together a proposal for shovel ready projects to fund with the leftover money. The wetland treatment bench scale and pilot scale testing is a priority for BLM because the 4 draining mines in Cement Creek are severely impacting water quality in the Animas River watershed. BLM will obligate money to one of the existing Upper Animas agreements for DRMS to hire a consultant to assist with bench scale testing. The proposal from BLM will carry more weight if there is matching funds from DRMS to complete the work.

The ARSG watershed group is supportive of passive treatment testing at the American Tunnel and would like to accomplish the testing this year. The bench scale test would consist of column testing of American Tunnel water with different recipes of compost, limestone, wood chips (or other proprietary medias) to reduce the water utilizing the biologic action of the Desulfovibrio bacteria to take the oxidized metals and reduce them back into their sulfide form for removal from the water column. The bench scale testing contract would include the recommendations of the contractorTraditional passive treatment systems utilizing similar water can effectively remove over 90% of most metals from AMD.

On Fri, Mar 7, 2014 at 10:07 AM, Renner - DNR, Steven <[steven.renner@state.co.us](mailto:steven.renner@state.co.us)> wrote:

Can you please provide a brief description of the testing - size / scope / location?

Steve Renner

**Senior Project Manager / Geologist**

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On Fri, Mar 7, 2014 at 9:55 AM, Brown - DNR, Kirstin <[kirstin.brown@state.co.us](mailto:kirstin.brown@state.co.us)> wrote:

Bruce and Steve,

Can we allocate any matching funds for the Passive Treatment bench scale testing for American Tunnel water?

The applications for the BLM (Red Devil leftovers) money are due on 3/11/2014 (**tuesday!**).

**Can we provide any sev tax? Even \$2,000.00** would go a long way towards securing the funding to do this testing.

Thanks.

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